



---

---

## Operating Your Walthers Proto 2000 Tsunami® Equipped Locomotive Using a Traditional Power Pack

You may control your locomotive using an ordinary power pack, though its operation will be a bit different than when running a non-decoder equipped locomotives.

1. With the power pack throttle set to 0 (no voltage on the track), Tsunami will be silent as it has no power. The throttle must be turned up to about 5 volts to give sufficient voltage to power up Tsunami's internal circuitry. At this point, you will begin to hear the background sounds such as a blower and air pump start on a steam locomotive or the prime mover on a diesel.
2. Increase the throttle setting further to around 7.5 volts or so will set the locomotive in motion, increasing the speed of the engine as the throttle is increased. Note that the direction can only be changed when the locomotive is stopped. Load compensation is also disabled when operating in analog mode, as is the cam-synchronised exhaust chuff. When in analog mode, the Tsunami always reverts to auto exhaust using the chuff rate setting in CV 218. On diesel locomotives the throttle will notch up as the voltage is increased.

### **When operating in DC:**

When operating in DC (analog mode), be careful not to exceed Tsunami's maximum input voltage of 27 volts. If your track voltage exceeds 21 volts, Tsunami will automatically shut down and begin flashing error code 10 on both its diagnostic lights as well as the headlight and backup light. When you see this condition, back down the throttle immediately.

For more information on CVs that can fine tune DC operation, please see the Tsunami Steam or Diesel User's Guides.